AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A membrane electrode assembly comprising two electrochemically active electrodes separated by a polymer electrolyte membrane, characterized in that there is a polyimide layer on each of the two surfaces of the polymer electrolyte membrane that are in contact with the electrodes and wherein said polyimide layers on the polymer electrolyte membrane each form a frame structure.

2. (Original) The membrane electrode assembly of claim 1, characterized in that the thickness of the polyimide layer is in the range from 5 μm to 1000 μm.

3. (Cancelled)

4. (Previously presented) The membrane electrode assembly of claim 1, characterized in that the two electrodes have an electrochemically active area whose size is at least 2 cm^2.

5. (Previously presented) The membrane electrode assembly of claim 1, characterized in that at least one of the polyimide layers is coated with fluoropolymers.

6. (Original) The membrane electrode assembly of claim 5, characterized in that the layer of fluoropolymer has a thickness of at least 0.5 μm.

7. (Previously presented) The membrane electrode assembly of claim 5, characterized in that the fluoropolymer is FEP.

8. (Previously presented) The membrane electrode assembly of claim 1, characterized in that the polymer electrolyte membrane comprises polyazoles.

9. (Previously presented) The membrane electrode assembly of claim 1, characterized in that the polymer electrolyte membrane is doped with an acid.

10. (Original) The membrane electrode assembly of claim 9, characterized in that the polymer electrolyte membrane is doped with phosphoric acid.

11. (Original) The membrane electrode assembly of claim 10, characterized in that the concentration of the phosphoric acid is at least 50 by weight %.

12. (Previously presented) The membrane electrode assembly of claim 1, characterized in that the membrane is obtainable by a method comprising the steps of

A. mixing one or more aromatic tetraamino compounds with one or more aromatic carboxylic acids and/or esters thereof containing at least two acid groups per carboxylic acid monomer, or mixing one or more aromatic and/or heteroaromatic diaminocarboxylic acids in polyphosphoric acid to form a solution and/or dispersion,

B. applying a layer using the mixture according to step A) to a support or to an electrode,

C. heating the sheetlike structure/layer obtainable according to step B) under inert gas to temperatures of up to 350°C to form the polyazole polymer,

D. treating the membrane formed in step C) until it is self-supporting.

13. (Currently Amended) The membrane electrode assembly of claim 10, characterized in that the degree of doping is between 3 and 50 weight %.

14. (Previously presented) The membrane electrode assembly of claim 1, characterized in that at least one of the electrodes is made of a compressible material.

15. (Previously presented) The membrane electrode assembly of claim 1, characterized in that at least one of the polyimide layers is in contact with at least one of the electrodes.

16. (Original) The membrane electrode assembly of claim 15, characterized in that the surfaces of the polymer electrolyte membrane are completely covered by the two electrodes and the polyimide layers.

17. (Previously presented) The membrane electrode assembly of claim 15, characterized in that the contact area between polyimide layer and electrode is at least 5 mm^2.

18. (Original) The membrane electrode assembly of claim 17, characterized in that the contact area is less than or equal to 100%, based on the electrochemically active area.

19. (Previously presented) The membrane electrode assembly of claim 15, characterized in that the contact area of the electrode is provided with fluoropolymer.

20. (Previously presented) The membrane electrode assembly of claim 1, characterized in that the two polyimide layers extend beyond the membrane and are in flat contact with one another.

21. (Original) The membrane electrode assembly of claim 19, that the two polyimide layers are welded to one another.

22. (Previously presented) The membrane electrode assembly of claim 1, characterized in that the two polyimide layers are in contact with electrically conducting separator plates.

23. (Previously presented) The membrane electrode assembly of claim 1, characterized in that the surfaces of the polymer electrolyte membrane are covered completely by the two electrodes and the polyimide layers.

24. (Previously presented) A fuel cell comprising at least one membrane electrode assembly according to claim 1.

25. (Previously presented) The membrane electrode assembly of claim 13, wherein the heating in said step C) is at temperatures of up to 280°C.

26. (New) The membrane electrode assembly of claim 5, wherein the thickness of the polyimide layer is in the range from 5 μm to 1000 μm.

27. (New) The membrane electrode assembly of claim 5, wherein the two electrodes have an electrochemically active area whose size is at least 2 cm^2.

28. (New) The membrane electrode assembly of claim 5, wherein that the polymer electrolyte membrane comprises polyazoles.

29. (New) The membrane electrode assembly of claim 5, wherein the polymer electrolyte membrane is doped with an acid.

30. (New) The membrane electrode assembly of claim 29, wherein the polymer electrolyte membrane is doped with phosphoric acid.

31. (New) The membrane electrode assembly of claim 30, wherein the concentration of the phosphoric acid is at least 50 by weight %.

32. (New) The membrane electrode assembly of claim 5, wherein the membrane is obtained by a method comprising the steps of

A. mixing one or more aromatic tetraamino compounds with one or more aromatic carboxylic acids and/or esters thereof containing at least two acid groups per carboxylic acid monomer, or mixing one or more aromatic and/or heteroaromatic diaminocarboxylic acids in polyphosphoric acid to form a solution and/or dispersion,

B. applying a layer using the mixture according to step A) to a support or to an electrode,

C. heating the sheetlike structure/layer obtainable according to step B) under inert gas to temperatures of up to 350°C to form the polyazole polymer,

D. treating the membrane formed in step C) until it is self-supporting.

33. (New) The membrane electrode assembly of claim 30, wherein the degree of doping is between 3 and 50 weight %.

34. (New) The membrane electrode assembly of claim 5, wherein at least one of the electrodes is made of a compressible material.

35. (New) The membrane electrode assembly of claim 5, wherein at least one of the polyimide layers is in contact with at least one of the electrodes.

36. (New) The membrane electrode assembly of claim 35, wherein the surfaces of the polymer electrolyte membrane are completely covered by the two electrodes and the polyimide layers.

37. (New) The membrane electrode assembly of claim 35, wherein the contact area between polyimide layer and electrode is at least 5 mm^2.

38. (New) The membrane electrode assembly of claim 37, wherein the contact area is less than 100%, based on the electrochemically active area.

39. (New) The membrane electrode assembly of claim 35, wherein the contact area of the electrode is provided with fluoropolymer.

40. (New) The membrane electrode assembly of claim 5, wherein the two polyimide layers extend beyond the membrane and are in flat contact with one another.

41. (New) The membrane electrode assembly of claim 39, wherein the two polyimide layers are welded to one another.

42. (New) The membrane electrode assembly of claim 5, wherein the two polyimide layers are in contact with electrically conducting separator plates.

43. (New) The membrane electrode assembly of claim 5, wherein the surfaces of the polymer electrolyte membrane are covered completely by the two electrodes and the polyimide layers.

44. (New) A fuel cell comprising at least one membrane electrode assembly according to claim 5.

45. (New) The membrane electrode assembly of claim 5, wherein the frame overlaps with the electrode.

46. (New) The membrane electrode assembly of claim 45, wherein the overlap is from 0.2 to 5 mm.

47. (New) The membrane electrode assembly of claim 5, wherein the frame does not cover the free electrode area.